

**UNITED STATES DEPARTMENT OF COMMERCE****Patent and Trademark Office**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/014, 297	01/27/98	BROWN	F LI30-001

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ART UNIT	PAPER NUMBER
2763	19

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)
	09/014,297	BROWN, FRED A.
	Examiner Kyle J. Choi	Art Unit 2763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1) Responsive to communication(s) filed on 24 July 2000.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 21-40 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 21-40 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are objected to by the Examiner.
 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved.
 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 a) All b) Some * c) None of the CERTIFIED copies of the priority documents have been:
 1. received.
 2. received in Application No. (Series Code / Serial Number) _____.
 3. received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15) Notice of References Cited (PTO-892) 18) Interview Summary (PTO-413) Paper No(s). attached.
 16) Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) Notice of Informal Patent Application (PTO-152)
 17) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 20) Other:

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DETAILED ACTION

Continued Prosecution Application

1. The request filed on July 24, 2000 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/014,297 is acceptable and a CPA has been established. An action on the CPA follows.
2. The following is an initial Office Action in response to CPA request. Claims 1-20 have been canceled. Claims 21-40 have been added. Claims 21-40 are now pending in this application.

Information Disclosure Statement

3. The Information Disclosure Statement filed July 24, 2000 have been considered. An initialed copy of the Form 1449 is enclosed herewith.

Claim Rejections - 35 USC § 112, 2nd Paragraph

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 21-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. In particular, independent claims 21, 38 and 40 are incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01.

More specifically, all the independent claims recite a step of analyzing the first model using initial design parameters for violations. However, the next step recites modifying the initial design parameters to generate a second model irrespective of the analysis outcome. Furthermore, there is no recitation of modifying the first model, but rather generating a second model with modified initial parameters. Hence, it is vague and indefinite as to why the step of analyzing the first model is recited if neither the result of the analysis nor the first model is used for the final result. There seems to be no nexus between the step of analyzing the final step of generating the second model.

Dependent claims 22-37, 39 are rejected because they suffer from the same deficiency as their base claims due to dependency.

Clarification is required.

Claim Rejections - 35 USC § 112, 1nd Paragraph

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 29, 31, and 32 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In particular:

a. Claim 29 recites that a steady state first model is generated by "distributing error throughout the existing power line." Firstly, it is not understood how distributing error generates a "steady state" model. It is known in the art that a "steady state" model is one that is free from transient responses. How does distributing errors throughout the model generate a steady state model? The specification is silent on the subject.

b. Claim 31 recites altering a span adjacent to another span having a violation. However, there is no support for such a recitation in the specification. It would seem one cannot arbitrarily modify a span adjacent to another span having a violation unless the two spans are interacting

somehow to generate the violation. No description is forthcoming in the specification regarding this matter.

c. Claim 32 recites altering a span adjacent to another span having a tension violation. As discussed above, it would seem one cannot arbitrarily modify a span adjacent to another span having a violation unless the two spans are interacting somehow to generate the tension violation. No description is forthcoming in the specification regarding this matter.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

9. Claims 21-24, 27, 30-32, 34-37, 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Thompson et al.

Thompson et al. (US Pat. No. 5,574,841) discloses an apparatus and method for designing and maintaining power

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transmission lines. The system is a collection of computer programs that allow a designer to design a power line from scratch or perform analysis on already existing power lines for operational parameters such as transmission line sag due to environmental conditions, aging, etc. including modeling of the power lines and modifications of the designed/existing power line models to analyze and verify design criteria (see at least col. 3, lns. 17-20, 35-37; col. 4, lns. 15-19, 41-42, 54-58). Thompson et al. also teaches using/modeling usage of jumpers, i.e., clamps, (col. 7, lns. 5-6) and the ability to iterate design analysis so that all design criteria are satisfied, i.e., optimization (col. 7, lns. 45-48; col. 19, lns. 42-44). Furthermore, the conductors are not only modeled based on existing operational conditions, but also under extreme conditions to predict its performance (col. 20, lns. 42-44) and are checked for violations (col. 6, lns. 54-60)

Thompson et al. further teaches that existing power lines can be modeled and re-designed, for example, for re-stringing the conductors on already existing power lines, trimming the conductors to reduce sag, etc. (col. 2, lns. 40-48; col. 3, lns. 21-30, 50-61; col. 4, lns. 15-19; col. 5, lns. 35-42; col. 6, lns. 22-25, 54-60; col. 11, lns. 47-58; col. 12, lns. 5-7; col. 12, 23-26, 40-44; col. 13, lns. 48-53; col. 16, lns. 7-8, 25-28;

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col. 17, lns. 27; col. 20, lns. 29-64). These passages teach that already existing power lines are surveyed and put into the database (i.e., modeled). Moreover, Thompson et al. does not teach that these modeled power lines are not precluded from being operated on in the design modules. Rather, Thompson et al. teaches that the sag/tension calculations can be performed on these modeled power lines and can be replaced with new conductors to determine the change in sag/tension. These are separate and apart from the maintenance/monitoring module capabilities. Based on the above-description of the prior art, the following analysis of the claims follow:

(Claims 21 and 40): Independent claims 21 and 40 recite the steps of providing a first model with initial parameters of an existing power line, changing the operating conditions, checking for violations, and generating a second model with modified initial parameters of the existing power line.

In addition to what Thompson teaches as described above, Thompson patent includes a "Sag & Tension" program. Thompson teaches that the "Sag & Tension" program is used for routine maintenance. (see col. 20, line 29). During the routine maintenance, the connection points are entered including the environmental conditions and the conductor's state is then

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calculated based on these information (i.e., the existing conductor is modeled). This "modeled" conductor can then be analyzed under virtual extreme conditions. (see col. 20, line 42). Indeed, column 6, lines 54-60 specifically states:

Another program matches one conductor to another. That is, should an **EXISTING LINE** have been strung with conductor A and the designers want to replace it with conductor B (typically for sending more voltage down), they want to make sure the sag is the same so that the heavier conductor B **WILL NOT VIOLATE** the safety limits guaranteed by the previous conductor. (emphasis added)

The fact that the existing line having conductor A is now modeled with a conductor B constitutes generating a second model as recited in claim 21.

Turning now to the dependent claims:

(Claim 22): Claim 22 recites adjusting the location of the clamps. It is notoriously well known to use clamps to support the cables. More importantly, adjusting the position of clamps based on sag is also notoriously well known. Since building the designed power line is inherent to Thompson, using clamps is also inherent and contemplated by the Thompson reference. Indeed, the design costing/distribution program is taught to include calculation of cost of all the materials, time, and fittings for building the designed power line.

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(Claim 23): Claim 23 recites altering the position to avoid at least one of a clearance violation and a swing violation. As discussed above, Thompson patent already teaches violations based on clearance of the line as it sags.

(Claim 24): Claim 24 recites removing at least a portion of the modeled conductor. As explained above, Thompson utilizes a CAD program for designing and modifying the design. This would inherently include allowing the user to shorten or lengthen the conductor based on the simulation.

(Claim 27): Claim 27 recites the model having a plurality of spans and the altering comprises altering individual spans. Figures 21 and 25 show modeled power lines having plurality of spans. Moreover, altering one span at a time is inherent to the teaching of Thompson since that is how all designs are performed.

(Claim 30): Claim 30 recites the model having a plurality of spans and the altering the spans having violations. This is inherent in Thompson since the is the whole purpose of violation checks.

(Claim 31): Claim 31 recites alternating a span adjacent to a span causing a violation. This is inherent in Thompson because it is intuitive to alter a span if it is causing a violation to an adjacent span.

(Claim 32): Claim 32 recites altering a span adjacent to a span having a tension violation. Again, this is inherent in Thompson because it is intuitive to alter a span if it is the source of a violation to an adjacent span.

(Claim 34): Claim 34 recites the initial design parameters being original design parameters. As admitted by the applicant in a previous response of April 18, 2000 (paper no. 9), Thompson teaches using original design parameters of existing power lines.

(Claim 35): Claim 35 recites using surveyed information of existing power lines as the initial design parameters. As already explained above, Thompson teaches taking surveys of already existing power lines and inputting that information as the modeled power line.

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(Claim 36): Claim 36 recites that the second model undergoes analysis under increased operating conditions. As already explained above, Thompson teaches modifying an initial model and subjecting the modified models to extreme operating conditions.

(col. 20, lns. 42-44)

(Claim 37): Claim 37 recite analyzing the second model based on current safety codes. As explained above, Thompson already teaches modifying the existing power line with a new conductor and analyzes the modified power line for violations in relation to the safety limits. It is notoriously well known that these safety limits are based on safety codes mandated by local area zoning laws. (col. 6, lns. 54-60)

10. Claims 1-32, 34-40 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Optimal™.

Optimal™, submitted by the applicant, is a power line survey and design system for either designing new or existing power lines for conditions such as weather conditions, wind, swing, etc. related to designing an overhead power line. As the product description clearly teaches the suite of products (PoleCAD, CADtenary, PoleLOG, and SpanCheck) are used in designing new and existing power lines.

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The web pages submitted by the applicant does not have a publishing date. During a search for the product release date, examiner came across a product review article both published in June of 1996, one in "Measurement Solutions" and another in "T&D Design Automation" which proves the product was available before the filing date of the provisional application (January 31, 1997). Both of these articles describes the suite of applications by Optimal™. Moreover, Optimal™ web site suggests that the "overhead line survey and design" systems were available since January 1990. However, due to the lack of description of what was actually released in 1990, examiner relies on the June 1996 article as the product date.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

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12. Claims 25, 26, 28, 33, 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Power Line System's SAGSEC or SAPS.

In particular,

- a. Thompson teaches a power line design system for existing power lines as explained above. It does not specifically teach that the analysis includes status equilibrium states of the insulators as recited in claim 25.
- b. Thompson teaches a power line design system for existing power lines as explained above. It does not specifically teach that the analysis includes movement of the insulators coupled with the conductor and stiffness of individual supports as recited in claim 26.
- c. Thompson teaches a power line design system for existing power lines as explained above. It does not specifically teach that the analysis includes status equilibrium points for spans as recited in claim 28.
- d. Thompson teaches a power line design system for existing power lines as explained above. It does not specifically teach that the analysis without the use of Ruling Span concept as recited in claim 33.

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e. Claim 38 recites a combination of the above claims with claim 21.

Power Line Systems (submitted by applicant) discloses a true 3-dimensional power line modeling software called **SAPS** that was available since 1985. The program analyzes a power line model without the use of Ruling Span concept because it uses finite element analysis that considers, *inter alia*, transverse/longitudinal swings of insulators, deflections/axial forces/moments of support structures, and swings caused by lateral winds. Moreover, a newer product called **SAGSEC** also allows calculations of sag, tension and structural loads without using the Ruling Span concept. In a 1997 newsletter by Power Line Systems, SAGSEC was made available since late 1996. Hence, both SAPS and SAGSEC are valid prior art for the purposes of this rejection.

Therefore, it would have been obvious for one of ordinary skill in the art to have used Thompson with SAPS or SAGSEC to obtain a more thorough analysis of the power line design created on the Thompson system because as explained by Power Line Systems, the Ruling Span rule is too much of an approximation that does not provide an accurate result. Furthermore, Thompson provides the motivation that a design system should incorporate

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all of the tools necessary in one system. Hence, one with ordinary skill in the art of design power lines would have been motivated to supplement structural analysis that the Thompson system does not offer but otherwise would have done as routine in the art, to use a system like SAPS/SAGSEC to obtain an all around analysis before embarking on a major construction project such as constructing power lines.

12. Claim 33 rejected under 35 U.S.C. 103(a) as being unpatentable over Optimal™ in view of Power Line Systems.

Optimal™ teaches a power line survey and design system as explained above. It does not specifically teach that the analysis is done without the Ruling Span concept. As explained above, Power Line Systems makes available SAPS and SAGSEC programs that perform analysis without using the Ruling Span concept, teaching that the finite element analysis provides a more accurate result. Hence, it would have been obvious for one with ordinary skill in the art to have used Power Line's SAPS/SAGSEC analysis in using Optimal's design system since SAPS/SAGSEC provides a more accurate modeling result.

Conclusion

13. No claims allowed.

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle J. Choi whose telephone number is (703)306-5845. The examiner can normally be reached on Monday-Friday, 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin J Teska can be reached on (703)305-9704. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-1396 for regular communications and (703)308-1396 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Any response to this action should be mailed to:

**Commissioner of Patents and Trademarks
Washington, D.C. 20231**

or faxed to:

(703) 308-9051 (for formal communications intended for entry)

or:

(703) 308-1396 (informal or draft communications labeled "PROPOSED" or "DRAFT")

Hand delivered responses should be brought to Crystal Park 2, 2121 Crystal Drive, Arlington, VA., 6th floor receptionist.

Kyle Choi



Patent Examiner
Art Unit 2763

August 25, 2000